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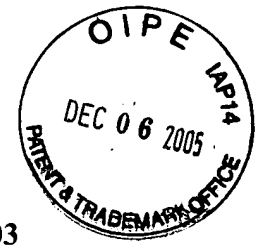

In re Application of: **TODD *ET AL.***

Serial No.: **10/650,101**

Filed: **Aug. 26, 2003**

Title: **"COMPOSITIONS AND METHODS FOR REDUCING THE VISCOSITY OF A FLUID"**

§ Group Art Unit: **1712**

§ Examiner: **ZIMMER, MARC S.**

§ Atty. Docket No: **2001-IP-005443U2**

MAIL STOP AMENDMENT
Honorable Commissioner of Patents
P. O. Box 1450
Alexandria, VA 22313-1450

CERTIFICATE OF MAILING

ATTY. DOCKET NO.: 2001-IP-005443U2
GROUP ART UNIT: 1712
EXAMINER: ZIMMER, MARC S.

PURSUANT TO 37 C.F.R. § 1.10, I HEREBY CERTIFY THAT I HAVE INFORMATION AND A REASONABLE BASIS FOR BELIEF THAT THIS CORRESPONDENCE WILL BE DEPOSITED WITH THE UNITED STATES POSTAL SERVICE AS EXPRESS MAIL, POST OFFICE TO ADDRESSEE, ON THE DATE INDICATED BELOW, AND IS ADDRESSED TO:

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TRANSMITTAL LETTER

Dear Sir:

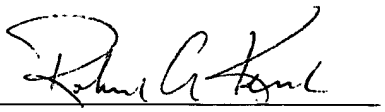
Applicants hereby submit the following documents to be filed with the United States Patent and Trademark Office:

- Amendment and Response to Office Action, Mailed September 9, 2005;
- Courtesy copy of pages 1, 24, and 25 of U.S. Patent Application Serial No. 10/254,268; and
- Return receipt postcard.

Please date stamp and return the enclosed postcard evidencing receipt of these materials.

Applicants believe that there are no fees due in association with this filing of this Response. However, should the Commissioner deem that any additional fees are due, including any fees for extensions of time, Applicants respectfully request that the Commissioner accept this as a Petition Therefor, and direct that any additional fees be charged to the Deposit Account of Halliburton Energy Services, Inc., No. 08-0300.

Respectfully submitted,



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Date: December 5, 2005

SUBTERRANEAN FORMATION TREATING FLUID CONCENTRATES, TREATING FLUIDS AND METHODS

Cross-Reference To Related Application

This Application is a Divisional of U.S. Application Serial No. 09/879,634 filed on June 11, 2001, now U.S. Patent No. _____.

Background of the Invention

1. Field of the Invention.

The present invention relates to methods and compositions for treating subterranean well formations, and more specifically, to improved subterranean formation treating fluid concentrates, treating fluids and methods of using the treating fluids.

2. Description of the Prior Art.

Producing subterranean formations penetrated by well bores are often treated to increase the permeabilities or conductivities thereof. One such production stimulation treatment involves fracturing the formation utilizing a viscous treating fluid. That is, the subterranean formation or producing zone therein is hydraulically fractured whereby one or more cracks or "fractures" are produced therein. Fracturing may be carried out in wells that are completed in subterranean formations for virtually any purpose. The usual candidates for fracturing or other stimulation procedures are production wells completed in oil and/or gas containing formations. However, injection wells used in secondary or tertiary recovery operations for the injection of fluids may also be fractured in order to facilitate the injection of the fluids.

surfactant is included in the treating or fracturing fluid in an amount in the range of from about 0 % to about 0.1 % by weight of water therein.

Yet another component which can be included in the treating fluid or fracturing fluid is a clay stabilizer. Examples of clay stabilizers include, but are not limited to, potassium chloride, sodium chloride, ammonium chloride and tetramethyl ammonium chloride and the like. Of these, potassium chloride and tetramethyl ammonium chloride are preferred. When used, the clay stabilizer is included in the concentrate in an amount in the range of from about 0.5 % to about 10 % by weight of the water therein.

Still another component that can be included in the treating fluid or fracturing fluid is a fluid loss control agent such as, for example, silica flour, starches, waxes and resins. The fluid loss control agent is included in the treating fluid in an amount in the range of from about 0 % to about 1 % by weight of water therein.

A final component which is usually included in the treating fluid or fracturing fluid is a breaker or crosslink delinker for causing the fluid to quickly revert to a thin fluid. Examples of suitable breakers or delinkers include, but are not limited to, a delayed breaker or delinker capable of lowering the pH of the treating fluid to cause the polymer crosslink to reverse. Examples of delayed breakers or delinkers which can be utilized include, but are not limited to, various lactones, esters, encapsulated acids and slowly soluble acid generating compounds, oxidizers which produce acids upon reaction with water, water reactive metals such as aluminum, lithium and magnesium and the like.. Of these, the esters are preferred. Alternatively, any of the conventionally used breakers employed with metal ion crosslinkers can be utilized such as, for example, sodium chlorite, sodium bromate, sodium persulfate, ammonium persulfate, encapsulated

sodium persulfate, potassium persulfate, or ammonium persulfate and the like as well as magnesium peroxide. Enzyme breakers that may be employed include alpha and beta amylases, amyloglucosidase, invertase, maltase, cellulase and hemicellulase is preferred. The breaker or delinker is included in the treating or fracturing fluid in an amount in the range of from about 0 % to about 1 % by weight of water therein.

The subterranean formation treatment fluids of the present invention also may include substantially any of the conventionally known foaming agents which do not adversely react with the fluid constituents such that a gaseous compound such as nitrogen, air, carbon dioxide or another gasifying compound can be admixed with the fluid to form a foam for introduction into the subterranean formation. The gaseous compound can be admixed with the fluid in an amount of from 5 % to in excess of 90 % to form a foamed treatment fluid for use in stimulating a subterranean formation. When foamed, the fluid of the present invention provides the same benefits as are found in the use of other foamed treatment fluids. The foamed fluid results in less polymer being introduced into the formation, can provide improved fluid loss control and can provide a gas assist in removing the treatment fluid from the well bore at the conclusion of the treatment.

In order to further illustrate the subterranean formation treating fluid concentrates treating fluids and methods of this invention, the following examples are given.

Example 1

The ability of the depolymerized polymer of the present invention to provide static fluid loss control to a treatment fluid introduced into a simulated subterranean formation and regained permeability subsequent to the treatment in comparison to